SONY

High Definition Video System

Digital HDVS

HDCAM

HD Digital Camcorder

HDW-790
HDW-790P

New-generation HDCAM Camcorder for Full-

fledged HD Productions

The HDW-750 Series HDCAM™ Camcorders, from the outset, have been used for a broad range of high-definition (HD) program productions – such as dramas, documentaries, and news gathering – due to their stunning picture quality, high operability, and exceptional mobility and durability. Now Sony has evolved the well-accepted HDW-750 Series to the new HDW-790 Series, offering camcorders with a variety of enhanced features.

Sony offers two versions of the HDW-790 Series HDCAM Camcorder: the HDW-790 "1080/59.94i, 50i" model, and the HDW-790P "1080/50i, 25P" model. With industry-proven three 2/3-inch type Power HAD™ CCDs, and a newly-incorporated 12-bit A/D converter, these camcorders offer outstanding picture performance with an HD resolution of 1920 x 1080. Incorporating a rich array of creative and convenient functions such as two standard HD-SDI outputs, selectable gamma curves, interval recording*, and a Slow Shutter function*, the HDW-790 and HDW-790P boost the operational flexibility required by both studio and field operations. Furthermore, all these exciting features are packed into a compact, lightweight, and durable body, giving the HDW-790 and HDW-790P excellent mobility and reliably to withstand challenging shooting conditions.

In all aspects of quality, operability, creativity, and reliability, HDW-790 and HDW-790P camcorders are sure to assume a vital role in full-fledged HD program production applications.

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* Requires optional boards.

Proven Performance

Two Versions

The HDW-790* Series of HDCAM camcorders has two versions – the HDW-790 and the HDW-790P.
The HDW-790 records in both 1080/59.94i and 1080/50i interlace modes. The HDW-790P supports interlace and progressive switchable operation in 1080/50i and 1080/25PsF modes. The HDW-790 is intended for users in both 60 Hz and 50 Hz regions, ideal for international co-productions, while the HDW-790P is intended to support multiple types of production in the 50 Hz region.

* In the following text, HDW-790 refers to both the HDW-790 (1080/59.94i, 50i model) and the HDW-790P (1080/50i, 25PsF model).

Power HAD CCD

The HDW-790 is equipped with field-proven three 2/3-inch type HD Power HAD CCDs that are based on the 1920 (H) x 1080 (V) Common Image Format (CIF). Inheriting Sony HAD sensor technology and on-chip lens structure of the latest Power HAD sensors, this imaging device provides an outstanding sensitivity of F10 (at 2000 lx, 3200K), a high signal-to-noise ratio of 54 dB (typical), and a remarkably low vertical smear level of -135 dB.
In addition, these advanced Power HAD CCD sensors bring a wide dynamic range of 600% in interlace mode and 460% in progressive mode*, allowing users to capture high-contrast scenes.

* Progressive mode is only available with the HDW-790P.

12-bit A/D Conversion and Advanced Digital Signal Processing (ADSP)

The HDW-790 incorporates a high-integrity 12-bit A/D conversion circuit, which allows high-quality images captured by the Power HAD CCD to be processed with great precision. This high-resolution A/D converter faithfully reproduces the contrast of both mid-to-dark tones and bright areas of the image. These outstanding images are then processed by powerful, high-speed, Advanced Digital Signal Processing (ADSP) which enables highly sophisticated image controls such as the TruEye™ process, multi-matrix correction, and adaptive highlight control (also known as knee aperture) for producing in-camera effects.

High-definition Picture Quality with the HDCAM Format

The HDW-790 camcorder adopts the proven HDCAM format to record 1920 (H) x 1080 (V) resolution, high-definition component digital signals. The HDCAM format uses an extremely intelligent compression scheme with a high video bit rate of 140 Mb/s (data rate on tape of 185 Mb/s.) This allows the format to provide superb picture quality onto a highly robust and cost-effective 1/2-inch tape, with a design inherited from the Betacam™ Series.

High-quality Audio Recordings

The HDW-790 records and playbacks high-quality, four-channel 20 bits/48 kHz digital audio. Users can freely select the audio input signal for each channel, choosing from the front microphone and additional wired or wireless microphones.

Long Recording Time on a Single Cassette

Utilizing the HDCAM format's high-density recording capability and compression technology, the HDW-790 provides a maximum of 40 minutes of recording in 1080/59.94i mode, and 48 minutes in 1080/50i and 1080/25PsF* mode on a single S-sized cassette.

∗1080/25PsF mode is only available with the HDW-790P.

Ergonomic Design

Compact and Lightweight Design

The HDW-790 camcorder is designed to be compact, lightweight, and ergonomically well balanced, providing a high level of mobility and comfort in various shooting situations. It weighs approximately 5.4 kg (11 lb 14 oz) including the viewfinder, microphone, BCT-40HD Tape, and BP-GL95 Battery Pack.

Intuitive Controls

All of the switches, meters, and indicators of the HDW-790 are in the most logical place for optimum functionality and ease of use. Operators will immediately feel at home with this camcorder, which takes user comfort to new levels.

Adjustable Shoulder Pad

The position of the HDW-790 shoulder pad can be adjusted either forwards or backwards without using a screwdriver. Operators can always attain a comfortable and well-balanced camera position, even when the camcorder is docked with a range of lenses.


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Operational Versatility

Wide Variety of Interfaces

Dual HD-SDI Outputs

The HDW-790 is capable of outputting two HD-SDI signals simultaneously. This offers great convenience, enabling multiple people to monitor shootings with connected HD monitors, and allowing the HD signal to be fed to additional HD equipment.

Down-conversion Output*

When an optional HKDW-702 Down Converter Board is installed, the HDW-790 provides down-converted standard-definition (SD) signal output with four-channel embedded audio. This makes it possible to monitor recording using a conventional SD monitor.
SD-SDI or analog composite output can be selected via the setup menu.

*An optional HKDW-702 Down Converter Board is required.

Dual Optical Filters Plus Electric Color Correction

The HDW-790 comes equipped with dual optical filters for Color Correction (CC) and Neutral Density (ND) for flexible color and exposure control. In addition, the camcorder is equipped with an electronic Color Correction function, which gives operators the choice of correcting color temperature optically or electronically, according to their needs.

Versatile Audio Interfaces

The HDW-790 is equipped with a range of audio interfaces: an analog 5-pin XLR connector for stereo audio output, two 3-pin XLR connectors with selectable MIC/Line level input, and the front microphone input. The two 3-pin XLR connectors can also be switched to accept four channels of AES/EBU digital audio input.

Assignable Functions

Three assignable buttons – two on the inside panel and one on the same button as the Turbo Gain function – enable functions frequently used in the field to be assigned, allowing the operator to make rapid changes when working in the field.

Microphone Volume Protection

A protection cover, located under the volume knob of the HDW-790 front microphone, helps prevent operators from accidentally changing the volume.

Memory Stick System Stores Camera Setup Parameters

The HDW-790 is capable of saving and recalling setup parameters such as scene files, reference files, and lens files via Memory Stick™ media*. This allows users to effectively manage camera parameters for individual scenes, plus individual operators' camera-setup preferences, such as viewfinder indicator settings.

*The MSH-128/64/32 is the only "Memory Stick" media that has been operationally tested with this product. (The MSH-64/32 is no longer available.)

Turbo Gain

The built-in Turbo Gain function on the HDW-790 enables camera gain to be boosted up to +42 dB.

Camera Remote Control

The HDW-790's camera settings and basic VTR functions can be remotely controlled using an optional RM-B150 or RM-B750 Remote Control Unit via its 8-pin remote connector.

Slot for WRR-855 Series Wireless Microphone Receiver

An optional Sony wireless microphone receiver, the WRR-855A/855B, slots directly into the HDW-790 camcorder body without requiring cable connection.


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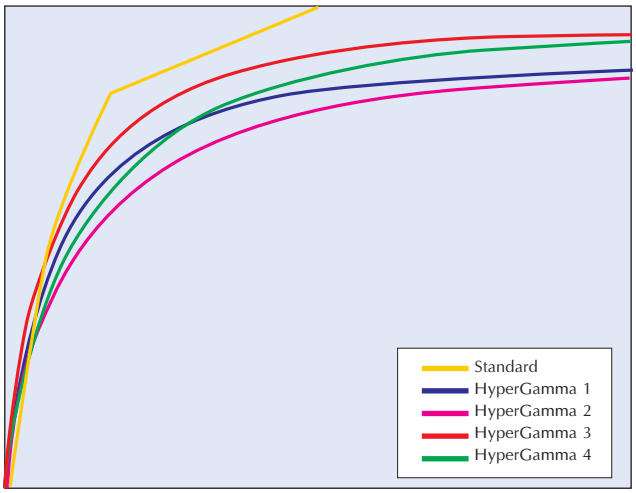
Creative Versatility

Selectable Gamma Curves – HyperGamma

The HDW-790 offers a wide variety of gamma curves to flexibly handle contrast, and give a specific 'look' to an image. HyperGamma is a sophisticated gamma-setting function that allows maximum use of the wide dynamic range characteristic of the Power HAD CCD. The HDW-790 provides four types of HyperGamma curves: HyperGamma 1, 2, 3, and 4 – they are identical to those of the HDW-F900R CineAlta™ Camcorder. Operators can select the best-suited preset gamma curve, depending on scenes. HyperGamma 1 and 3 enhance natural tonal reproduction in low-key areas, while HyperGamma 2 and 4 are suitable for scenes with wide dynamic ranges. In addition to HyperGamma curves, the HDW-790 provides four types of standard gamma curves.



Low-light Shooting with Slow Shutter Function*

The HDW-790 offers a Slow Shutter function for capturing clear images in low-light environments. By installing an optional HKDW-905R Slow Shutter/Image Inverter Board, the shutter speed can be extended to a maximum 64 frames. This not only increases camera sensitivity but also produces a blurring effect when shooting a moving object. The shutter speed is selectable from 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8-, 16-, 32-, and 64-frame periods.

*An optional HKDW-905R Slow Shutter Image Inverter Board is required. The Slow Shutter function and the Image-inversion function cannot be used simultaneously.

Interval Recording*

The HDW-790 offers an Interval Recording function that intermittently records signals at pre-determined intervals. This is convenient for shooting over long periods of time, and also when creating pictures with special effects of extremely quick motion.

*An optional HKDW-703 Picture Cache Board is required.

Picture Cache Recording*

Picture Cache Recording is a convenient function of the HDW-790 whereby up to eight seconds of video signal are buffered into memory before the REC button is even pressed. This means that everything that happened eight seconds before the REC button was pressed, in Standby mode, will be recorded to tape – a capability that can help prevent the loss of unexpected but important events that occur before the operator has even had the chance to press the REC button.

*An optional HKDW-703 Picture Cache Board is required.

TruEye™ Processor

The TruEye processor of the HDW-790 is one of the most innovative features of Sony digital signal processing technology. This feature makes it possible to virtually eliminate hue distortion, particularly obvious in high-light conditions that result from conventional RGB analog or digital processing. By processing the video signal data at three levels – brightness, hue, and saturation – similar to how the human eye works, the TruEye feature assists in the reproduction of natural skin tones.

Multi-matrix Function

The Multi-matrix function of the HDW-790 enables color adjustments to be applied over a color and/or hue range as specified by the operator. The color spectrum is divided into 16 areas of adjustment, where the hue and/or saturation of each area can be adjusted. This provides interesting in-camera color effects – similar to secondary color correction.

Variable Black Gamma

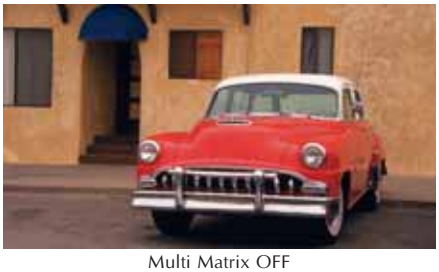
The Variable Black Gamma function of the HDW-790 allows for fine adjustment of tonal reproduction in the shadow area. This feature can help to bring out details from the dark parts of a picture, without affecting mid-tones, while maintaining the absolute black level. It is particularly helpful for dark scenes when the black has to stay black, but there is a requirement to pull out more details.

Other Features of the HDW-790

• Image-inversion function of the HDW-790 (requires an optional HKDW-905R Slow Shutter/Image Inverter Board): allows the use of a variety of image-inverting lenses, anamorphic lens adaptors, and cinema lenses with 2/3-inch adaptors.
• Freeze Mix function (requires an optional HKDW-905R Slow Shutter/Image Inverter Board): superimposes a previously recorded image on the viewfinder. This allows the operator to quickly and easily frame or reposition a subject when a shot must be taken from the same position or in the same framework as a previous take.
• Auto Tracing White (ATW) Balance for automatic adjustments in camera color temperature according to lighting changes
• Intelligent light system synchronizes strobe on/off to the REC button
• Metadata recording: UMID, Extended UMID, Shot Mark
• Compatible with a wide variety of film accessories for the HDW-F900/F900R


Conventional Camcorder


TruEye


Multi Matrix OFF


Multi Matrix ON

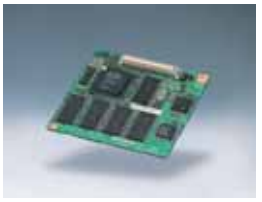

Standard Gamma


Black Gamma ON

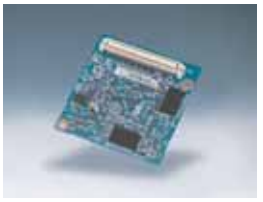
Simulated images

Optional Accessories

HKDW-702
Down Converter Board



HKDW-703
Picture Cache Board



HKDW-905R
Slow Shutter/Image Inverter Board

HDVF-C35W
3.5-inch* LCD Color Viewfinder
*Viewable area measured diagonally

HDVF-20A
2.0-inch* CRT B/W Viewfinder
*Viewable area measured diagonally

BKW-401
Viewfinder Rotation Bracket

VCT-14
Tripod Adaptor

RM-B750
Remote Control Unit

RM-B150
Remote Control Unit

BP-GL95/GL65
Lithium-ion Rechargeable Battery

BP-L80S/L60S Lithium-ion
Rechargeable Battery

BC-L500
Battery Charger

BC-L70
Battery Charger

BC-M150
Battery Charger

AC-DN10
AC Adaptor

ECM-680S
Stereo Shotgun-type Electret
Condenser Microphone

ECM-678/674*
Shotgun-type Electret Condenser
Microphone
*Requires K-1502 3-pin to 5-pin
Conversion Cable.

CAC-12
Microphone Holder

WRR-855A/855B
Wireless Microphone Receiver

WRR-861A/861B
Wireless Microphone Receiver
*Requires optional mounting bracket
(A-8278-057-A).

WRR-862A/862B
Dual Diversity Wireless Microphone
Receiver
*Requires optional mounting bracket (A-
8278-057-A).

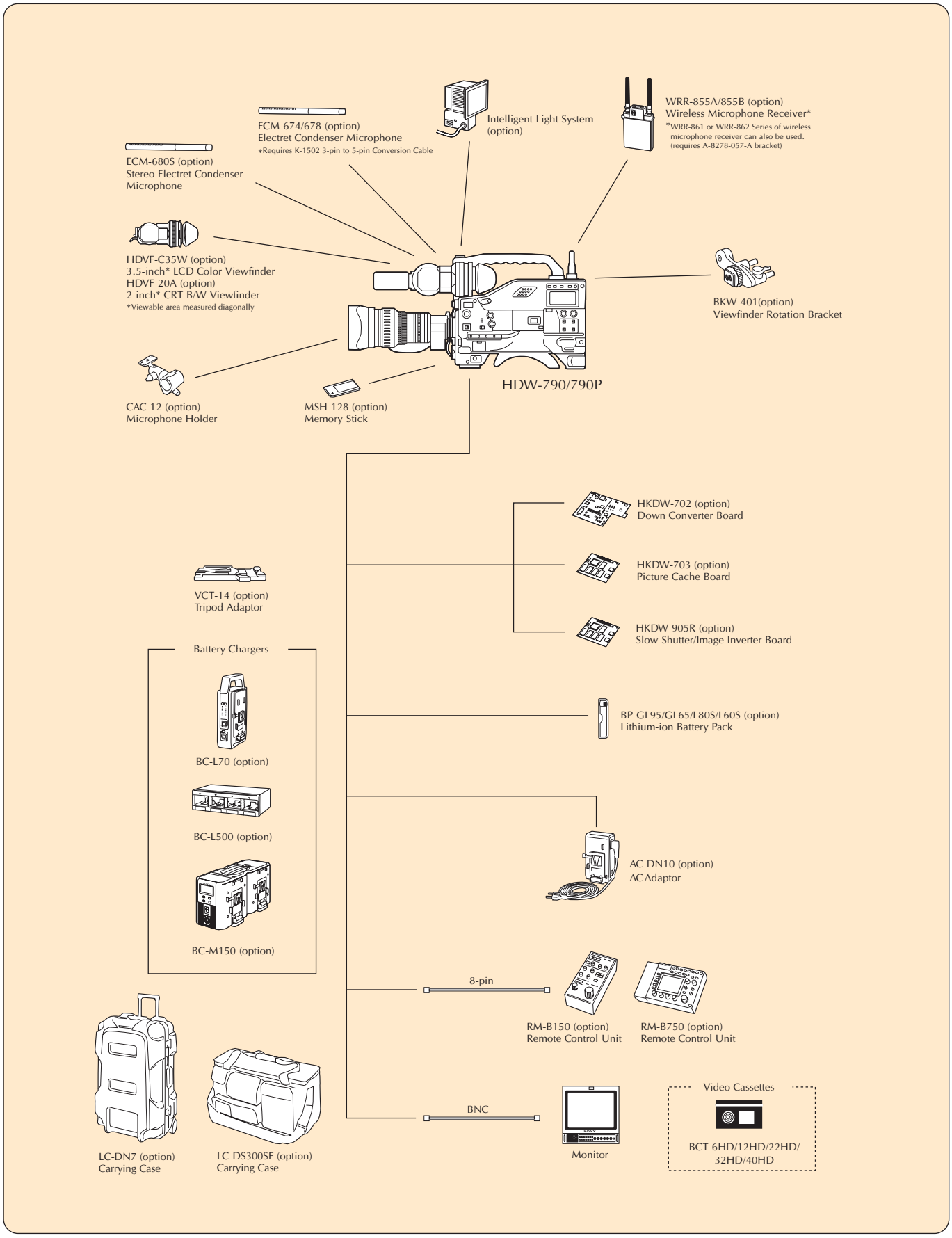
BCT-6HD/12HD/22HD/32HD/40HD
HDCAM S Cassette

MSH-128
Memory Stick Media

LC-DN7
Hard Carrying Case

LC-DS300SFT
Soft Carrying Case

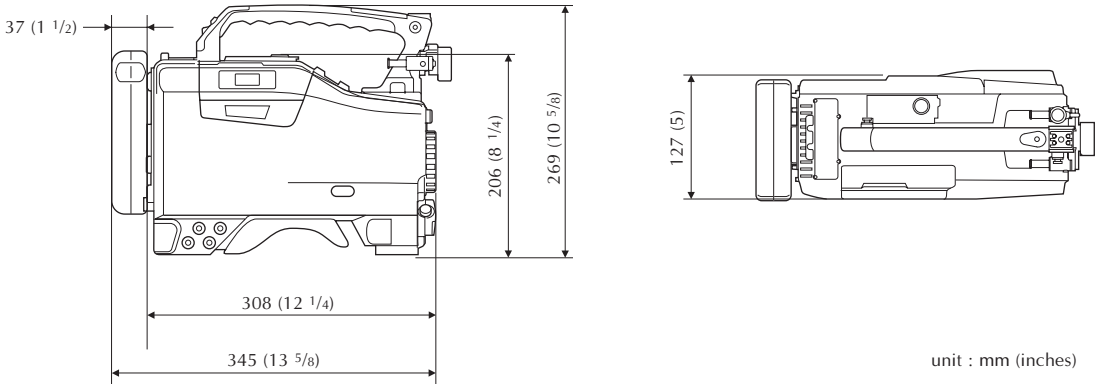
System Configuration



Specifications

General	HDW-790	HDW-790P
Mass	5.4 kg (11 lb 14 oz) with typical ENG lens, BCT-40HD cassette, viewfinder, microphone and BP-GL95 battery	
Power requirement	DC 12 V (+5.0 V/-1.0 V)	
Power consumption	Approx. 34 W (With 12 V power supply, REC mode)	
Operating temperature	0 °C to +40 °C (+32 °F to +104 °F)	
Storage temperature	-20 °C to +60 °C (-4 °F to +140 °F)	
Operating humidity	25 % to 85 % (Relative humidity)	
Continuous operating time	110 min (With BP-GL95)	
Inputs/outputs		
Genlock video input	BNC (1), 1.0 Vp-p 75 Ω, unbalanced	
Time code input	BNC (1), 0.5 V to 18 Vp-p, 10 kΩ	
Audio CH1/CH2 input	XLR-3-pin type (Female) (2), -60 dBu/-50 dBu/-40 dBu/+4 dBu/AES/EBU (0 dBu=0.775 Vrms.)	
MIC input	XLR-5-pin type (Female) (1), -60 dBu/-50 dBu/-40 dBu (LPF ON)	
Test output	BNC (1), 1.0 Vp-p, 75 Ω, unbalanced	
HD-SDI output	BNC (2), 0.8 Vp-p, 75 Ω, unbalanced	
Audio output	XLR-5-pin type (Male) (1), 0 dBm	
Time code output	BNC (1), 1.0 Vp-p, 75 Ω	
Earphone	Mini-jack (1), 8 Ω, −∞ to −18 dBs variable	
DC input	XLR-4-pin type (Male) (1), 11 to 17 V DC	
DC output	4-pin (Female) (1),11 to 17 V DC, Max. 100 mA	
Lens	12-pin	
Remote	8-pin	
VTR section		
Recording format	HDCAM	
Tape speed	96.7 mm/s (for 1080/59.94i), 80.7 mm/s (for 1080/50i)	80.7 mm/s (for 1080/50i, 25PsF)
Playback/Recording time	40 min. (for 1080/59.94i), 48 min. (for 1080/50i) with BCT-40HD	48 min. (for 1080/50i, 25PsF) with BCT-40HD
Fast forward/rewind time	5 min with BCT-40HD	
Recommended tape	Sony BCT-6HD/12HD/22HD/32HD/40HD	
Sampling frequency	Y: 74.25 MHz, P_B/P_R: 37.125 MHz	
Quantization	10-bit/sample of input-output signals (8-bit/sample for internal compression process)	
Error correction	Reed-Solomon code	
Error concealment	Adaptive three dimensional	
Audio performance (Playback with standard HDCAM Deck)		
Frequency response	20 Hz to 20 kHz, +0.5 dB/-0.8 dB	
Dynamic range	More than 85 dB (Emphasis ON)	
Distortion	0.08 % Max.	
Cross talk	-70 dB Max.	
Wow & flutter	Below measurable limit	
Camera section		
Pickup device	3-chip 2/3-type CCD	
Effective picture elements (H x V)	1920 x 1080	
Optical system	F1.4 prism system	
Sensitivity	F10.0 at 2000 lux, 89.9 % reflective	
Minimum illumination	0.0024 lx (F1.4 lens, +42 dB gain, with 64-frame accumulation)	
Smear level	-135 dB (typical)	
Video S/N ratio	54 dB (typical)	
Built-in filters	A: Cross B: 3200 K C: 4300 K D: 6300 K 1: Clear 2: 1/4 ND 3: 1/16 ND 4: 1/64 ND	
Shutter speed	1080/59.94i mode: 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 (s) 1080/50i mode: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 (s)	1080/50i mode: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 (s) 1080/25PsF mode: 1/33, 1/50, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 (s)
Clear scan	1080/59.94i mode: 30.00 to 4300 Hz 1080/50i mode: 25.00 to 4700 Hz	1080/50i mode: 25.00 to 4700 Hz 1080/25PsF mode: 25.00 to 2100 Hz
Lens mount	Special bayonet mount	
Supplied Accessories		
	Operation manual (1), Shoulder strap (1), XLR connector cover (4), Stereo microphone (1)	

Dimensions



unit : mm (inches)

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Distributed by

MSD2007-607(10414V1)MAT00285

Printed in Hong Kong